To: Wetland Recovery Project Board of Governors

From: Science Advisory Panel

Date: September 30, 2002

Re: Progress report on SAP Activities

At the October 2000 Wetlands Recovery Project (WRP) symposium, the Governing Board approved the Science Advisory Panel's (SAP) plan to focus on the development of a position paper that extends the generic program goals proposed during the 2000 Symposium to specific, scientifically-based objectives that can be used to guide the WRP recovery efforts in southern California. As part of this process, the SAP also agreed to identify data gaps and pursue initiatives necessary to refine the regional goals and support their implementation. This memo outlines the progress that has been made toward accomplishing these tasks and details additional activities that the SAP has undertaken since the May 2001 progress report on SAP activities.

Position Paper on Strengthening Regional Planning of Wetland Recovery

At the June 2002 Governing Board meeting, the Science Panel presented the first in a series of position papers making specific recommendations to the WRP on improving regional planning of wetland recovery in Southern California. In this paper, entitled " Strengthening Regional Planning of Wetland Ecosystem Recovery and Management in Southern California," the SAP recommends implementing three major initiatives designed to support regional recovery efforts:

1. Establish scientifically-based quantifiable recovery objectives;
2. Implement a monitoring program to measure wetland condition and progress towards regional recovery; and
3. Develop decision support tools to aid in prioritizing recovery activities.

This document details the general concept presented in the position paper and the progress made towards implementing each initiative.

Quantifiable Recovery Objectives

Quantifiable recovery objectives differ from the programmatic Regional Strategy goals in that they form the major framework detailing the elements of ecosystem structure and function that must be restored to achieve "recovery." These objectives constitute the ecological criteria that should be considered in the evaluation of WRP progress towards recovery and in the prioritization of WRP recovery projects. The position paper outlines five major quantifiable recovery objectives and discusses each in depth. To utilize these objectives in monitoring or decision support, the SAP will develop more specific criteria by wetland system (e.g. estuarine, riverine, etc.)

Regional Wetland Monitoring Program

By setting regional goals and quantifiable recovery objectives, the WRP has clearly defined goals for the program, and the elements of wetland structure and function that must be restored for ecosystem recovery. The next logical step is to implement a monitoring program that assesses baseline conditions, measures recovery progress, and evaluates the effect of anthropogenic stressors constraining recovery. This program would have many other benefits. Among them, it would provide an integrated and cost-effective regional approach to addressing the management information needs of WRP partners. It would streamline reporting of monitoring data, making them more accessible for routine scientific evaluation of restoration and management techniques. The monitoring program could also aid in evaluating the effectiveness of wetland regulatory and management policy.

As currently envisioned, the long-term goal of SAP efforts in this area is to develop mapping, inventory, assessment tools, and programmatic infrastructure to institute long-term, region-wide monitoring program of southern California wetlands and associated resources. At the September 2002 SAP meeting, the SAP identified the development of a regional monitoring program as its number one priority in the upcoming years. Conceptually, a regional wetlands monitoring program ideally includes activities and coordination at three levels:

Level 1. Region-wide inventory and mapping to characterize wetland resource extent
Level 2. Region-wide survey of resource condition with respect to recovery progress and response to anthropogenic stress
Level 3. Intensive monitoring at designated sites of resource condition associated with restoration project monitoring, regulatory programs, reserve monitoring etc.

To begin development of this regional monitoring program, the SAP has initiated or planned activities at all three levels (described in more detail in the following sections). The principal source of funding to implement these activities is a $200K grant from the FY 2001 USEPA Section 104 (CWA) Program grant funds, with $50K in matching funds from the Coastal Conservancy. EPA Region 9 is coordinating the development of regional monitoring program development for Southern California, Central Coast, and San Francisco Bay, with the intention that these regional programs will serve a model for development of a state-wide wetlands monitoring program. The EPA Office of Research and Development (ORD) is providing additional technical support through the Corvallis laboratory. Other funding, technical support and in-kind support are provided by a number of agencies and program mentioned specifically in each section.

<u>Level 1-- Ecoatlas of Wetland and Riparian Resources</u>

The goal of these Level 1 activities is to develop a publicly accessible, GIS-compatible, relational database of maps and data sets that describe the physical and biological extent of wetland and riparian resources in southern California coastal watersheds from Point Conception to the California/Mexico border. Both present-day and historical resource data will be targeted. The database will include information on setting and other factors affecting resource condition (e.g. surrounding land use, population density).

The ecoatlas will be regularly updated to provide “relatively current” information on the extent

and condition of wetland and riparian resources in coastal watersheds. While the ecoatlas will contain datasets of multiple spatial scales (from site- to region-wide), SAP efforts will focus on acquiring or compiling region-wide, landscape-scale data. We anticipate that this database will be used for general mapping, as a sampling frame for regional assessments and ongoing monitoring, and for decision support for recovery planning.

Priorities for development of the ecoatlas include 1) updating the mapping of estuarine wetlands, 2) developing standardized approaches for mapping freshwater wetlands and riparian resources in coastal watersheds, and 3) developing the database infrastructure to accommodate the ecoatlas datasets. The US FWS National Wetland Inventory program is currently updating maps of all estuarine wetlands in the WRP project area. The SAP will utilize EPA Section 104 funds to groundtruth these maps, and compile ancillary data sets describing the physical and biological resources, and factors affecting them. Concurrently, the SAP is utilizing grant funds from NOAA CSC and USGS Gap Analysis Program (mentioned under decision support) to develop standardized methodologies for mapping and inventorying freshwater wetland and riparian resources. To this end, the SAP is coordinating with the Resources Agency, Legacy Program, and the Riparian Joint Venture staff to ensure consistency with the statewide development of standardized methods compatible with mapping, classification, and inventory of wetland and riparian resources. The end product of the 1.5-year USGS-funded project is a pilot riparian resource inventory for 5 watersheds that will serve as strawman for agency feedback and a template for expanding inventory efforts in southern California coastal watersheds.

Level 2 -- Regional Survey

The goal of the regional survey is to assess wetland and riparian resource condition with respect to restoration progress and response to anthropogenic stress. Attributes of this survey would include a random selection or sub-sample of sites by wetland sub-class to statistically estimate wetland condition on a regional basis. To develop this survey, the SAP will undertake a series of discussions with the WMG, Task Forces and Governing Board. Issues that will be addressed include:

- What are the information management needs of the WRP partners?
- What aspects of resource condition should be monitored to address these needs?
- What assessment methods, tools, and indicators should be utilized in survey?
- How much will the survey cost, and who will pay for it?

To begin to address these questions, the SAP has initiated a series of activities and collaborations to ensure that adequate tools and information exists when these discussions occur. These are:

- **EPA Environmental Assessment and Monitoring Program (EMAP) –** The SAP is developing experience in EMAP regional survey methodology (including statistical sampling design, data management, QA/QC procedures, etc.) by coordinating the 2002 assessment of estuarine wetlands in southern California. This assessment program will sample a total of 90 sites in California and another 90 in Oregon and Washington. While EMAP assessments traditionally focus on contaminants, SAP involvement in the project has lead to the piloting of additional field and GIS indicators that may be appropriate and cost-effective means of assessing

wetland condition in a regional survey. The SAP will use the design and results of this assessment as a strawman to discuss with WRP partners the cost/benefits of indicator selection and sampling design.

- **Rapid Assessment Methods (RAM)** – The SAP, in collaboration with EPA Region 9 and partners in San Francisco Bay and the Central Coast, are working to develop a cost-effective, rapid assessment tool to estimate wetland condition. It is anticipated that RAM will be one of several tools utilized in the regional survey, as well a possible tool for project-specific monitoring and evaluation of wetland regulatory policy (Level 3 activities). This project, funded by the FY 2002 EPA Section 104 grant, will result in a provisional method that will be verified pending continued funding from EPA in FY 2003.

- **Collaboration with Western Center for Ecological Indicator Research (WCEIR)** --The SAP is collaborating with WCEIR, the recipients of an EPA STAR grant, to develop cost-effective indicators of wetland condition appropriate for Pacific coast ecosystems. The SAP envisions the WRP will be the beneficiaries of this research by employing the most promising indicators in a regional survey.

Level 3 – Intensive Monitoring

The goal of SAP initiatives at this third tier of monitoring is to better coordinate the site-specific monitoring (e.g. reserve monitoring, mitigation projects, WRP-funded restoration projects, etc) to better utilize the data for adaptive management. Towards this end, the SAP is proposing to develop with the WMG a minimal set of standardized monitoring and electronic reporting requirements for WRP-funded restoration projects. The SAP will work with other types of monitoring programs to determine the extent to which some of the data can be made available to the public through a centralized database.

Decision Support

Once quantifiable recovery objectives have been established, the next step is to use them to guide WRP recovery activities, based on a set of clearly defined priorities. In determining the priority of a project for funding, it is important that its merit to the ecological recovery of the region be clearly established, along with considerations such as technical feasibility and cost. In the position paper, the SAP recommends that the WRP develop decision support tools to help prioritize the funding of preservation and restoration activities based on the ecological criteria outlined in the quantifiable recovery objectives. The SAP suggests two types of decision support projects: 1) prioritization of riparian corridor preservation and restoration in coastal watersheds, and 2) establishment of wetland habitat acreage goals. Of these two projects, the former is of higher priority because of the greater opportunities for preservation and restoration of riparian corridors relative to coastal wetlands and the rapid pace of development occurring in these areas.

Landscape Assessment of Riparian Ecological Integrity

In the process of exploring decision support tools to prioritize recovery of riparian areas, the SAP began to work with the NOAA Coastal Services Center (CSC) to develop a GIS-based tool to

assess the ecological integrity this resource on a landscape scale. The conceptual approach of this tool is based on the Spatial Wetlands Assessment for Management and Planning (SWAMP) model, a NOAA CSC product used to examine the ecological significance of a wetland to its watershed by assessing contributions it makes to habitat support, water quality, and hydrology. The SAP envisions that this assessment tool can aid in:

- Strengthening long-term regional planning of recovery activities by pro-actively targeting for watershed management planning and recovery activities riparian areas with a high functional contribution to the watershed.

- Improving the annual WRP project selection process by evaluating proposals from the perspective of how its selection will contribute to recovery on a landscape scale. This perspective is often lost while discussing the merits of a project with respect to site-specific factors such as technical feasibility, cost, etc.

- Developing priorities for preservation and restoration within a watershed. County Task Forces can use this a preliminary screening tool to identify areas that appear to be important ecologically for further assessment as a part of the watershed management planning process.

As currently conceived, the long-term goal of this project would be to incorporate the landscape assessment indicators into a user-friendly, geographic information system (GIS)-based decision support tool. Features of this tool will allow the user to integrate the results of the landscape assessment of ecological function, along with other GIS data layers such as public land ownership, city and county zoning maps (indicative of planned future growth), local conservation planning, etc. to aid in prioritizing recovery efforts.

The implementation plan for the 1.5 year pilot project calls for 1) development of the methodology of the landscape assessment, 2) compilation of existing data, 3) identifying and addressing major data gaps, and 4) testing and evaluating assessment on five southern California coastal watersheds. To assist in the development of this assessment tool, the NOAA CSC has provided the WRP with over $2.5 million in funding, data, and in-kind support including:

- Technical support of NOAA CSC staff to aid in development and computer programming of the landscape assessment tool;
- Provision of land cover (C-CAP) and digital elevation model (IfSAR) data for entire southern California region to address major data gaps;
- Grant funding to the WRP to evaluate high-resolution remote sensing data for use in riparian mapping, and to develop and test assessment methodology on 5 pilot watersheds.

WRP Task Force watershed coordinators, funded through a Prop 13 grant, are providing support by compiling existing data need for the landscape assessment. The SAP was also awarded an additional $50K in funding from the USGS GAP Analysis program to develop riparian mapping methods and establish a riparian resource inventory for the 5 pilot watersheds.

At the end of the pilot project, the SAP, WMG and Task Forces will 1) evaluate how best to incorporate the tool into regional recovery planning by the WRP and its partners; and 2)

determine the data, funding, and staff resources needed to complete the next phase of the project. The WMG and SAP will also evaluate the utility of expanding the model to assess additional factors that influence WRP priorities such as feasibility and socioeconomic considerations.

Habitat Acreage Goals

The position paper recommends establishment of habitat acreage goals is a means of prioritizing recovery efforts to restore the habitat types that have experienced the greatest loss. Subsequent discussions between the WMG and SAP have highlighted the significant difference between prioritizing habitat types and setting numerical acreage targets, and have brought into question whether setting numerical targets would significantly improve regional planning. The WMG was particularly concerned that the process of setting acreage targets would come at a significant cost to the WRP in terms of staff time, funding, and perhaps most importantly, the strain on the positive working relationships on which the WRP is based. Given these concerns, the SAP and the WMG have agreed that the WRP should focus on identifying priority habitat types for acquisition and restoration rather than setting numerical acreage targets. This would be done by: 1) comparing historical versus present day wetland acreage by habitat type, and 2) developing the habitat acreage requirements of certain indicator, threatened and endangered species using monitoring data and best professional judgment. The SAP and WMG will develop a strategy to develop these data sources, and determine how they can be used to prioritize the recovery of wetland and riparian habitat types.

Other Decision Support Tools

Through discussions between the SAP, WMG and Coastal Conservancy staff, it has become clear that decision support tools in addition to the SWAMP model are needed. Because of the coarse scale of assessment, the SWAMP tool will not provide great enough detail about a particular site and thus additional tools may be needed to assist in project-level decision support. The SAP has begun discussing with the WMG what tools would help meet the full range of the WRP's decision support needs. At minimum, the SAP envisions providing the WMG with a checklist of ecological criteria that should be considered in the project selection process.

Summary

The following matrix presents a summary of SAP-led WRP initiatives, collaborators, funding sources, and anticipated work products over the next 1.5-2 years:

Initiative	Activity	Principal Collaborators (in addition to WRP partners)	Funding Sources and Amount	Anticipated Work Products (1.5 –2 yrs)
Regional Monitoring	Inventory & Mapping	US FWS NWI Riparian Joint Venture California Legacy Program USGS NOAA CSC	USGS –$50K EPA Section 104 -$200K NOAA CSC - $100K Coastal Conservancy - $25K	1. Region-wide ecoatlas of estuarine wetlands 2. Pilot riparian ecoatlas for 5 coastal watersheds
	Regional Survey Development	EPA/EMAP EPA Region 9 EPA/ORD/Corvallis WCEIR San Francisco Estuary Inst. CCC-Central Coast	EPA Section 104 -$200K EMAP - $580K	1. Provisional rapid assessment method 2. Results from EMAP regional survey of estuarine wetlands 3. Trial indicators to pilot from WCEIR (EPA STAR grant recipients)
	Project Specific Monitoring	WRP WMG & Task Forces	N/A	Recommended minimum monitoring and electronic reporting requirements
Decision Support	SWAMP landscape assessment tool	NOAA-CSC	NOAA-CSC (>$2.5 million in data, technical support, and grant funding)	1. Field-verified SWAMP landscape assessment methodology 2. Results of landscape assessment on 5 coastal watersheds 3. Analysis of utility of fine-scale remote sensing technologies for riparian inventory
	Project – level decision support	WRP WMG, Task Forces NOAA-CSC	N/A	Checklist of ecological criteria to consider in selection of riparian preservation/restoration projects